WHAT IS CLAIMED IS:

1. A method for increasing throughput over network connections experiencing data loss due to non-congestion-based packet loss, comprising:

identifying, at a network node, non-congestion-based packet loss over a network connection between a sending module and the network node;

sending a loss notification signal from the network node to the sending module in response to identification of the non-congestion-based packet loss;

verifying the non-congestion-based packet loss at the sending module; and

performing a first loss recovery procedure, different from a second loss recovery procedure associated with congestion-based packet loss, if the non-congestion-based packet loss is verified at the sending module.

2. The method of Claim 1, wherein the non-congestion-related packet loss comprises packet loss due to bit errors (PLB).

3. The method of Claim 1, wherein sending a loss notification from the network node comprises embedding data associated with the packet experiencing packet loss into a signaling protocol packet, and sending the signaling protocol packet as the loss notification to the sending module.

4. The method of Claim 3, wherein sending the signaling protocol packet to the sending module further comprises embedding the signaling protocol packet into the payload of a network layer packet, and sending the signaling protocol packet to the sending module via the network layer packet.

5. The method of Claim 4, wherein verifying the non-congestion-based packet loss comprises:

forwarding the signaling protocol packet from a network layer of the sending module to a signaling protocol layer of the sending module;

identifying a transport layer protocol in a next header field within the data embedded in the signaling protocol packet;

informing the identified transport layer protocol of the non-congestion-based packet loss; and

verifying the non-congestion-based packet loss via the identified transport layer protocol.

6. The method of Claim 5, wherein verifying the non-congestion-based packet loss via the identified transport layer protocol comprises:

marking the packet experiencing non-congestion-based packet loss to indicate that the loss notification signal was received from the network node for the packet; and

enabling the performance of the first loss recovery procedure in response to receipt of a predetermined number of duplicate acknowledge packets from the network node for the marked packet.

7. The method of Claim 5, further comprising dropping the signaling protocol packet if the transport layer protocol in the next header field is not among a predetermined group of transport layer protocols.

8. The method of Claim 5, wherein the transport layer protocol comprises any one of TCP, UDP, and TFRC.

9. The method of Claim 4, wherein the network layer packet comprises an Internet Protocol (IP) packet.

10. The method of Claim 4, wherein the network layer packet comprises a protocol field identifying a protocol of the signaling protocol packet.

11. The method of Claim 3, wherein embedding data associated with the packet experiencing non-congestion-based packet loss comprises copying as many bytes from the packet experiencing non-congestion-based packet loss as can fit into the signaling protocol packet within the network layer packet.

12. The method of Claim 3, wherein the signaling protocol packet comprises a next header field identifying a transport layer protocol of the sending module.

13. The method of Claim 1, wherein verifying the non-congestion-based packet loss at the sending module comprises:

marking the packet experiencing non-congestion-based packet loss to indicate that the loss notification signal was received from the network node for the packet; and

enabling the performance of the first loss recovery procedure in response to receipt of a predetermined number of duplicate acknowledge packets from the network node for the marked packet.

14. The method of Claim 13, further comprising continuing normal communication at the sending module during a time required to receive the predetermined number of duplicate acknowledge packets.

15. The method of Claim 1, wherein performing the first loss recovery procedure comprises:

sending the packet experiencing packet loss;

setting a slow start threshold equal to a number of packets in flight;

until the packet experiencing packet loss is acknowledged, incrementing a congestion window for each duplicate acknowledge received; and

setting the congestion window equal to the slow start threshold when the packet experiencing packet loss is acknowledged.

16. The method of Claim 1, wherein the second loss recovery procedure comprises a standard congestion response procedure.

17. The method of Claim 1, wherein identifying non-congestion-related packet loss comprises distinguishing between congestion-related packet loss and non-congestion-related packet loss over the network connection.

18. The method of Claim 1, wherein identifying non-congestion-related packet loss comprises identifying bit errors associated with a packet transmitted to the network node using checksum information provided to the network node via the packet.

19. The method of Claim 1, wherein the network connection comprises at least one of a wireless link and a wired link.

20. A communication device for communicating information over a network, comprising:

a receiver for receiving indications of packet loss due to bit errors (PLB) pertaining to one or more packets previously transmitted via the communication device;

a packet marking module coupled to receive the PLB indications and to mark the respective previously-transmitted packets as potentially subject to PLB;

a verification module coupled to receive a packet loss indication and coupled to the packet marking module to determine whether the packet loss indication corresponds to any of the previously-transmitted packets that have been marked; and

a non-congestion-based loss recovery module coupled to the verification module to perform packet loss recovery without requiring reduction of a congestion window for the previously-transmitted packets that are both associated with the packet loss indication and have been marked.

21. The communication device as in Claim 20, further comprising a congestion-based loss recovery module coupled to the verification module to perform a second packet loss recovery that includes a reduction of the congestion window for the previously-transmitted packets that are associated with the packet loss indication and that have not been marked.

22. The communication device as in Claim 20, wherein the packet loss indication comprises at least one duplicate acknowledge (DUPACK) received from the network for a particular previously-transmitted packet.

23. The communication device as in Claim 20, wherein the packet loss indication comprises a predetermined number of duplicate acknowledges (DUPACKs) received from the network for a particular previously-transmitted packet.

24. The communication device as in Claim 23, further comprising a counter module coupled to the receiver to count the DUPACKs received from the network for the particular previously-transmitted packet.

25. The communication device as in Claim 20, wherein the packet loss indication comprises a packet acknowledge timeout notification.

26. The communication device as in Claim 20, further comprising a signaling protocol module coupled to receive the PLB indication, extract embedded information from the PLB indications, and to identify a next header indication in embedded information to notify a transport layer identified by the next header indication of the potential PLB.

27. The communication device as in Claim 26, wherein the signaling protocol module is coupled to the packet marking module at the transport layer via an application programming interface (API).

28. The communication device as in Claim 20, wherein the communication device comprises a mobile device capable of wireless communication via a wireless network.

29. The communication device as in Claim 20, wherein the communication device comprises a device coupled to communicate via a landline network.

30. A system for increasing throughput over network connections experiencing data loss due to non-congestion-based packet loss, comprising:

(a) a network element coupled to a network comprising:

(i) a receiver to receive packets transmitted via the network; and

(ii) a transmitter to transmit a loss notification signal to sources of the packets experiencing the non-congestion-based packet loss; and

(b) a communication device coupled to the network element via the network, the communication device comprising:

(i) a receiver to receive the loss notification signal from the network element where the communication device is at least one of the sources of the packet experiencing the non-congestion-based packet loss;

(ii) a packet marking module coupled to receive at least a portion of the loss notification signal and to mark the packet as potentially subject to non-congestion-based packet loss;

(iii) a verification module coupled to receive a packet loss indication and coupled to the packet marking module to determine whether the packet loss indication corresponds to any packet that have been marked; and

(iv) a non-congestion-based loss recovery module coupled to the verification module to perform packet loss recovery without requiring reduction of a congestion window for the packets that are both associated with the packet loss indication and have been marked.

31. The system as in Claim 30, wherein the network element further comprises an embedding module to embed packet header data into the loss notification signal from packets experiencing non-congestion-based packet loss.

32. The system as in Claim 31, wherein the communication device comprises an extraction module to extract a next header from the embedded packet header data to identify a protocol layer to be notified of the non-congestion-based packet loss.

33. The system as in Claim 30, wherein the communication device further comprises a congestion-based loss recovery module coupled to the verification module to perform a second packet loss recovery that includes a reduction of the congestion window for the packets that are associated with the packet loss indication and that have not been marked.